Net Foreign Assets Management and Capital Account Liberalization. The Romanian Case*

Florian NEAGU**

ABSTRACT

EU accession requires, inter alia, free movements of capital. If a massive capital outflow occurs, the central banks from the accession or acceding countries may carry two types of intervention: on money market, and introducing restrictions on capital account. The paper explains when is recommendable to initiate one or other type of intervention, quantifying the intervention costs and introducing the idea of a minim ceiling the net foreign assets may not drop beneath. The model is tested on Romania data, and results assess that a decrease into the net foreign assets up to 20% should call for central bank intervention only on money market. A higher sunk of the net foreign assets will require restrictions on capital movements.

JEL Classification Numbers: C22, E58, F32, F36, G13
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The views expressed in this paper are those of the author and do not necessarily correspond to the views of the National Bank of Romania.
** National Bank of Romania, European Integration and External Relations Department, e-mail: Florian.Neagu@bnro.ro

1. Introduction

European Union accession implicitly infers capital account liberalization. As economic practice has exhibited, some problems might come up during the liberalization process, due to both net major capitals inflows or outflows. This paper examines only the problems arisen from capitals exit, and strives to frame the best reaction a central bank might originate in order to prevent the exacerbation the balance of payments and other macroeconomic variables imbalances.

It is most likely that in the following years the acceding, accession and candidate countries will face net inflows, not outflows, due to the following reasons:

(i) Catching-up the EU members requires for the Central, Southeastern and Eastern transition countries to gain higher economic growth rates. Higher productivity will bring on foreign capital.

(ii) Curbing the inflation will increase the money demand, and the supply could arrive both from inside the country, but also from the outside.

(iii) Disinflation process implies higher real interest rates and currency appreciation, which will invite foreign capitals (Buch and Piazolo, 2001). Additionally, Gruben (2001) finds that any measure that eliminates the restrictions on capital movements could generate a cutback in the inflation rate by 3%.

It is also possible that the inflow or outflow pattern scores no significant change in pace and volume. Begg (2001) assesses that the EU members recorded the biggest capital inflows a few years before their entrance into the Economic and Monetary Union. Therefore it might be possible that the inflows towards the acceding, accession and candidate countries face the same pattern, and not to gain power as the EU accession moment is drawing near.

Whatever the pattern would be, the speculative fear remains. The backbone central bank arms in order to fight against advert to the manipulation of the interest rates, official reserves (and exchange rates implicitly), required reserves and/or restrictions in free movements of capital.

Bringing in capital movements restrictions in order to counteract the speculative outflows is an exceptional measure, and can be drafted just for limited periods of time. Some papers (for example, Dooley, 1996; Edwards, 2000; Frankel, 1996; Stotsky, 1996) unveil that new restrictions on capital movements are not so efficient solution as it might seem. Kaminsky and Schmukler (2000), Dornbusch (2001), Edison and Reinhart (2001), Edwards (1999), Gregorio and others (2000), canvassing the effectiveness of the capital controls in some Asian countries affected by the financial crisis, reach the same conclusions.

On the other hand, the opponents of free movements of capital plead their position arguing that the benefits from liberalization do not excel the costs raised by the occurrence or even exacerbation of the macroeconomic unbalances. Kraay (1998), testing the hypothesis the capital account liberalization enforces the financial sector and improves the quality of the prudential regulations (curbing the systemic risk), reaches that the relation is almost never positive and significant. The liberalization process can also be accompanied by the contagion effect with negative outcomes for financial sector. Schinasi and Smith (1999) assess that contagion effect may occur in a balance of payment crisis when the international investors restructure their portfolio, entailing the liquidation of their positions from countries unaffected by crises.

Keeping or bringing in new capital restrictions should also take into account the possible consequences that may turn into costs:

(i) Capital movements restrictions may be a negative signal for foreign investors that the authorities are not able to deal or to solve the structural problems. This decrease in trust may generate a foreign capital blench (Bartolini and Drazen, 1994).

(ii) These restrictions cannot be substitutes for economic and social reforms.

(iii) It is not so clear, nor in theory or in practice, if bringing in new restrictions will cut the volatility. Buch, Heinrich and Pierdioch (1998) argue that new restrictions might drive an exchange rate overshooting because, from the economic point of view, this measure is like a negative shock on domestic interest rates.

Overall, the process of capital account liberalization as a normal step towards accession is a challenge for the Central, Southeastern and Eastern European central banks. The answer in a potential distress that might jeopardize the financial stability acquires two main choices: actions on money market, and administrative restrictions for capital movements. Both types of interventions bear specific costs, and the central bank will choose that intervention that offers the same effect at the lowest cost.

The paper is structured as follows: the next section explains why we consider being more efficient for a central bank to focus on the net foreign assets instead of the official reserves. It also describes the alternatives of reaction for a central bank if a significant capital outflow occurs and the net foreign assets are triggered below a certain threshold. The third and forth sections propose and explain the models framed in order to quantify the costs of the central bank reaction. Comparing the cost of reaction on money market with the cost encompassed by imposing administrative restrictions on capital flows, we acquire the optimum reaction, as a function of the level of the net foreign assets. In the fifth section we apply the methodology developed into the fore sections, using the database for Romania. The last section concludes the main aspects of the paper.

2. Net foreign assets management and capital account liberalization

Focusing on the level of official reserves during the liberalization process might be less efficient than monitoring net foreign assets (NFA), due to the following:

(i) The information regarding the net foreign assets is more significant than the information on official reserves for the central bank policy makers in order to highlight some trends from the banking system and to accordingly trim the policies.

(ii) Net foreign assets are the correspondent of the financial flow with the world, and the dynamic of the NFA reflects straight and concise the balance of payment evolution; it also might signal the potential weaknesses of the liberalization process. Additionally, during the forecasting of the NFA evolution, any significant deviation from the trend might be a signal for the policy maker that a speculative

flow has occurred, or a sound inflow has arisen, but the sterilization costs will be important.

(iii) The level of monetization from the Central, Southeastern and Eastern European economies is much below the EU average. Net foreign assets are an important broad money counterpart and a NFA increase entails a non-inflationary broad money expansion.

Let's assume a central bank aims to promote an optimal level for the net foreign assets. This level is either an exogenous variable (i.e., agreed during the negotiations with the international financial organizations or an economic target committed during the accession process; reaching the level is binding), or is the outcome from some restrictions inflicted into the NFA dynamic. In order to develop the second scenario, let us assume the NFA follow the differential equation:

$$\frac{\partial NFA(t)}{\partial t} = \frac{\partial \frac{NFA_d(t)}{CS(t)}}{\partial t} = nfa' = \frac{NFA_d'*CS - NFA_d*CS'}{CS^2} = \frac{NFA_d'}{NFA_d} * \frac{NFA_d}{CS} - \frac{NFA_d}{CS} * \frac{CS'}{CS}$$

where:

NFA = net foreign assets (denominated in foreign currency)

NFA_d = net foreign assets (denominated in domestic currency)

CS = nominal exchange rate (an increase in exchange rate implies the depreciation of the domestic currency)

nfa' = first order differentiation of NFA

$\frac{NFA_d'}{NFA_d} = \mu =$ the rate of change for NFA_d;

$\frac{CS'}{CS} = cs =$ the rate of change for CS

Thus,

nfa' = NFA*($\mu - cs$) $\Rightarrow$

NFA(t) = NFA(t_0)*$e^{(\mu - cs)t}$, where (μ-cs) is a constant

The restraint in this equation advert to the (μ - cs) (i.e., if the remonetization of the economy is envisaged, than the condition will entail that (μ - cs) should be higher than GDP growth rate). We have:

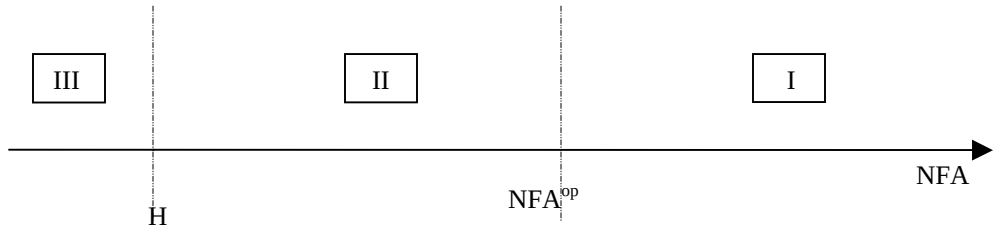
$$NFA_{t+i}^{0p} = NFA_t(1+\overline{\mu - cs})^i \qquad (1)$$

where:

NFA^{op} = optimal level for NFA

$\overline{\mu - cs}$ = optimal growth rate for NFA

If NFA drop (or there is an anticipation that will drop) below the optimum level (NFA^{op}), central bank will react, either on money market, or bringing in administrative restrictions on capital account. The type of the reaction will be chosen balancing the cost entitled by every category of reaction. Because the administrative reaction is very brutal and is used just in exceptional circumstances, we bring the idea of a minimum ceiling for the NFA (H). Thus, the central bank reaction imposing restrictions on capital movements emerge as a possibility just in case the NFA level drops beneath the barrier level H. The values for the NFA might be in the next situations, as described in the following diagram:



There are the following situations:

I. $NFA_t \geq NFA^{op}$: it is not necessary for the central bank to cut in, because the actual net foreign assets are above the level for the optimum net foreign assets;

II. $H < NFA_t < NFA^{op}$: the central bank might react through open market operations in order to promote the target. The cost of such intervention is described in the third section;

III. $NFA_t \leq H$: the central bank might react either on money market, or imposing administrative restrictions on capital movements, according to the lowest cost of intervention. The cost of administrative measures is modeled into the forth section.

As we have already mentioned, the paper studies the situations described by cases no. II and III, and the next sections explain them in details.

3. The cost of money market intervention

The relation between net foreign assets and the elements of the balance and payment is:

$$\Delta NFA = CC + CK + \Delta RZ \qquad (2)$$

where[1]:

CC = current account balance;

CK = capital account balance;

RZ = foreign reserves;

Moreover:

$$CC = E\text{-}X = f(Y, Y^*, CS_1/CS_0) \qquad (3)$$

$$CK = g(r\text{-}r^*, CS_1/CS_0) \qquad (4)$$

[1] All the variables from (2) are denominated in foreign currency, end of period

where:

E, X = export, import respectively

Y, Y^* = gross domestic product, gross domestic product of the rest of the world, respectively

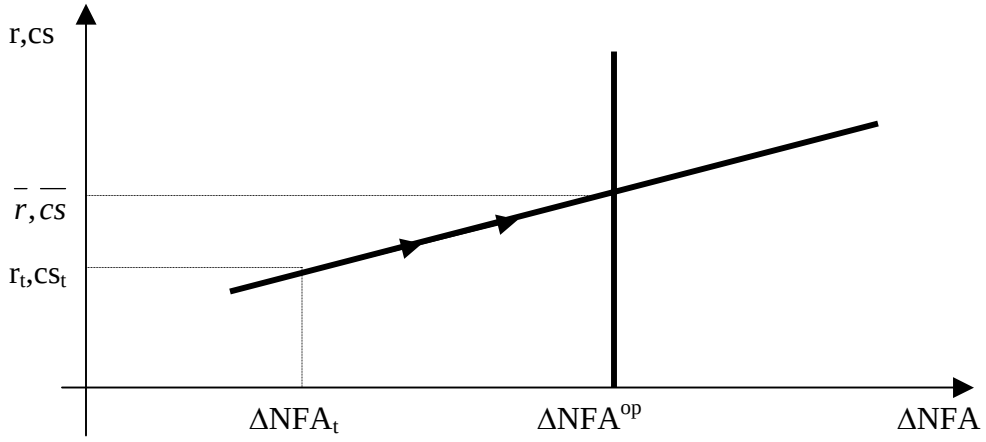
$r-r^*$ = spread between domestic and foreign interest rate

CS_1/CS_0 = cs = rate of domestic currency depreciation

Due to the fact the paper studies just short-term evolution of the net foreign assets, especially from speculative determinants, we may consider Y, Y^* and r^* being constant. We rewrite (2), using (3) and (4):

$$\Delta NFA = h(r, cs) = \alpha r + \beta cs,$$

Therefore, $\Delta NFA_t = \alpha r_t + \beta cs_t$ (5)



Then,

$$\begin{aligned}\Delta NFA^{op} &= NFA^{op} - NFA_{t-1} = \alpha \bar{r} + \beta \bar{cs} \\ &= \alpha(r_t + \Delta r) + \beta(cs_t + \Delta cs) \\ &= \Delta NFA_t + \alpha \Delta r + \beta \Delta cs\end{aligned} \quad (6)$$

From relation (6) we notice that, in order to bring the NFA at the optimum level, a central bank may intervene on money market either by increasing interest rates, or by depreciating domestic currency, or both. It is worth to mention that, in the Central, Southeastern and Eastern European countries, appealing to the intervention through the exchange rate is hardly grasped, for the least following reasons: (i) the ongoing need for curbing inflation, (ii) the imperative to carry on the real convergence process, and (iii) the exchange rate regime that pegs more or less the domestic currency by other currency (euro, ordinarily). The reaction to alter exchange rate, depreciating the domestic currency, might jeopardize the above-mentioned processes. That is way the Central, Southeastern and Eastern European countries dispose almost exclusively of the interest rate as a tool of intervention.

Assume the UIP relation:

$$\mathbf{cs_t = c + \theta(r_t - r_t^*),} \qquad (7)$$

where c is a constant, and θ intercept the hypothesis relaxation from the UIP (free movements of capital, rational expectations, free float regime, etc.)

Subtracting in (7), and assuming r* constant, we obtain:

$$\Delta cs = cs_t - cs_{t-1} = \theta(r_t - r_{t-1}) = \theta(\Delta r) \qquad (8)$$

From (6) şi (8) we reach the level interest rates must change in order to achieve the net foreign assets goal.

$$\Delta r = \frac{\Delta NFA^{op} - \Delta NFA_t}{\alpha + \beta\theta} = \frac{NFA^{op} - NFA_t}{\alpha + \beta\theta}$$

Central bank intervention to bring NFA_t at the optimum (NFA^{op}) requires the absorption of the excess foreign currency demand. Central bank buys liquidity on money market at higher interest rates (higher with Δr). This is in fact an effort to sterilize the excess foreign currency demand, and the cost of the operation is encompassed by the following relation:

$C_A = \Delta NFA^{op}\ \Delta r = \Delta NFA^{op}\left(\frac{NFA^{op} - NFA_t}{\alpha + \beta\theta}\right)$ (9)

After we measured the cost of the central bank intervention on money market (C_A) in order to achieve the optimum level for the NFA, the next section quantifies the costs of intervention through administrative measures that restricts capital movements.

4. The cost of restricting free movements of capital (administrative intervention)

Where short-term capital movements of exceptional magnitude impose severe strains on foreign-exchange markets and lead to serious disturbances in the conduct of monetary and exchange rate policies, being reflected in particular in substantial variations in domestic liquidity, the opportunity of re-imposing restrictions on capital movements might be more efficient than money market intervention. The European regulations also leave room for such a possibility (Council Directive 88/361/EEC for the implementation of Article 67 of the Treaty). The questions that catch the attention allude to: (i) what substantial variations in domestic liquidity actually means, (ii) how we determine the critical moment when the clause of abandoning the free movements of capital must be put into practice in order to stop the outflows, and (iii) which is the cost of a such measure.

Imposing restrictions on capital movements is an administrative measure undertook by the central bank in order to protect its official reserves, and to safeguard the net foreign assets against falling under a certain level.

If on money market intervention central bank uses market forces in order to achieve its aim, on administrative intervention the central bank uses the power of the provisions from foreign currency regulation. But some costs arise in this situation, too. We explain.

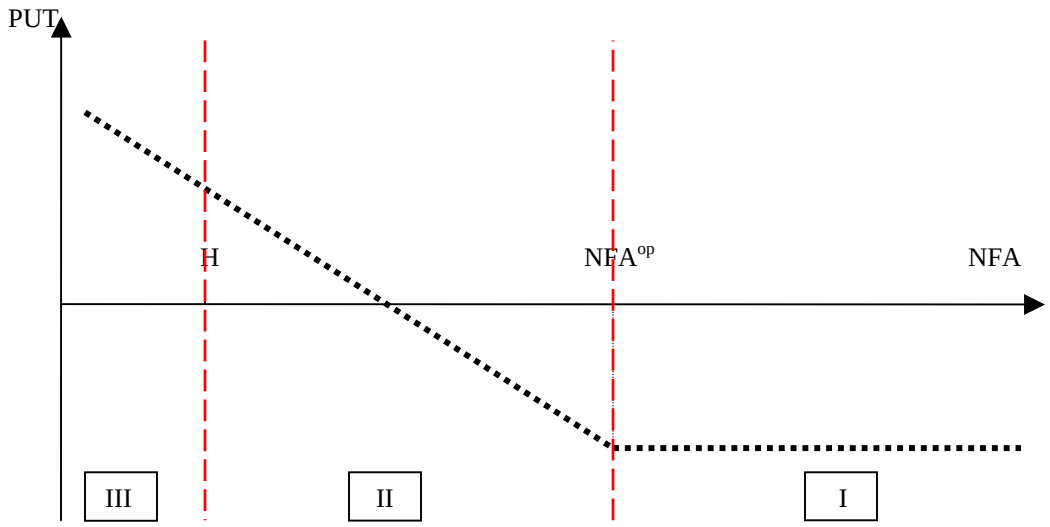
Central bank carries an official reserves portfolio, or the banking system accounts net foreign assets at certain value. The foreign capital outflow might

reduce this value. The central bank searches to avoid the drop in value of the NFA or of the official reserves under a critical threshold, laying on capital movements restrictions. This mechanism is in fact the purchase by the central bank of an option. More precisely, it is a long position on a PROTECTIVE PUT in order to hedge the risk the NFA drop below the minimum level. The counterpart is the rest of the banking system. Moreover, this option is a down-and-in option (it is activated when the barrier is reached).

The price for buying the option by the central bank is not effectively paid to the counterpart. It is like an opportunity cost a central bank must bear as a consequence of imposing the exceptional measures to restrict the capital movements.

The option could be exercised when NFA decreases below the critical threshold (barrier). In that moment, the central bank decides to preserve the value of the NFA and will not authorize capital operations that are not yet free, or will use the escape clause mentioned before in order to restrict the capital operations that are already free.

The PUT pay-off, according to the diagram described into the second section cases, is:



Let us now account the European PUT price, that is the cost regarding imposing restrictions on capital movement.

When the barrier is below the exercise price, the option price is[2]:

$$C_B = p_{di} = -SN(-x1)e^{-qT} + Xe^{-rT}N(-x1+\sigma\sqrt{T}) + Se^{-qT}\left(\frac{H}{S}\right)^{2\lambda}[N(y)-N(y1)] - \\ - Xe^{-rT}\left(\frac{H}{S}\right)^{2\lambda-2}[N(y-\sigma\sqrt{T})-N(y1-\sigma\sqrt{T})] \quad (10)$$

where:

$$x1 = \frac{\ln\left(\frac{S}{H}\right)}{\sigma\sqrt{T}} + \lambda\sigma\sqrt{T}$$

$$\lambda = \frac{r-q+\frac{\sigma^2}{2}}{\sigma^2}$$

$$y1 = \frac{\ln\left(\frac{H}{S}\right)}{\sigma\sqrt{T}} + \lambda\sigma\sqrt{T}$$

$$y = \frac{\ln\left(\frac{H^2}{SX}\right)}{\sigma\sqrt{T}} + \lambda\sigma\sqrt{T}$$

$$N(d) = \int_{-\infty}^{d} e^{-\frac{x^2}{2}}dx$$

p_{di} = PUT option price (C_B);

S = net foreign assets denominated in foreign currency (NFA);

q = exchange rate growth rate (cs);

σ = net foreign assets volatility;

H = the level for the barrier; if NFA drops below H, the option is exercised;

X = exercise price (NFA^{op});

T = maturity of the option.

In order to quantify the cost of the central bank administrative intervention (C_B) using relation (10), we have to set up the criterion whereupon H is determined. This threshold might be choose either arbitrarily by the monetary authority, subject to its risk aversion, or enforcing some conditions for the (μ-cs) element from relation (1), or using any other criterion. In the next section we turn into practice the theoretical framework assessed in the paper, and the level for H is determined using the third above-mentioned criterion, i.e. as a minimum multiple of months of imports.

5. Case study - Romania

In this section we experience the proposed methodology regarding the efficient net foreign assets management during the capital liberalization process. Romania is the chosen example. Romania aims to become member of the European Union in 2007. The economic reforms accomplished in this regard[3], as well as the efforts to catch-up the EU members, have raised the productivity and, consequently, a real appreciation of the domestic currency was afforded. Taking into account also the real positive interest rates, the central bank faces the process of capital liberalization as a challenge. The risk of speculative shocks on exchange rate is partly diminished due to both the managed float regime[4], and the official reserves that continually grew in the last years, as we may see in the following chart.

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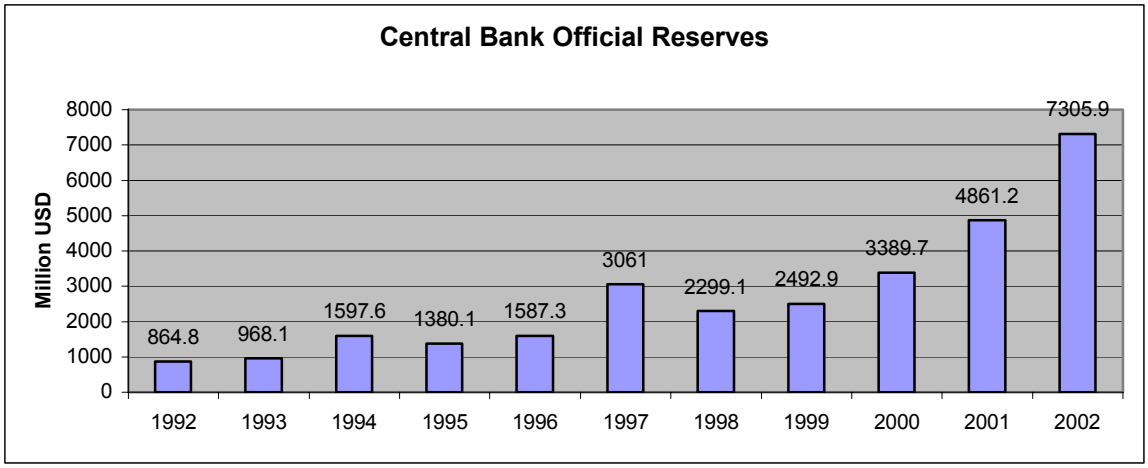
[2] See Hull, 2001

[3] A macroeconomic framework for Romania is described into the Annex 1

4 In Romanian Pre-accession Economic Program for 2003 it is mentioned that adopting inflation targeting in 2005 implies a gradual transit towards a free float regime



Source: NBR Annual Report 2001, NBR Monthly Report no. 12/2002

Capital account liberalization schedule is sequential, and takes into account the international theory and practice. The money market operations are planned to be the last liberalized (Annex 2). Capital operations that are not free are subject to central bank authorizations within an annual bound. Romania also aims to accomplish the commitments gone under IMF stand-by agreements, where official reserves and net foreign assets are monitored in order to reach a minimum level. That is way is germane to consider the optimum level for NFA (from relation 1) as an exogenous variable.

The econometric test regarding relation (5) is described below, and more details are presented into Annex 3. Statistical data cover the January 1998 – April 2003 horizon, with monthly frequency. The reference currency is USD[5].

The regression of the relation (5) is:

$$\Delta NFA_t = 3093\ r - 3063\ cs$$
$$(994) \quad (1006)$$

Follow-on, for July 2003 – December 2003 horizon we consider the optimum for net foreign assets (NFA^{op}) as an exogenous variable, being undertook from the

[5] At March 3, 2003, the NBR has adopted euro as the reference currency for the domestic currency, as a natural consequence for the foregone economic evolutions.

IMF stand-by agreement with Romania[6]. We carry 5 scenarios that shrunk the NFA level with 1%, 5%, 10%, 20%, and 25% respectively. For each scenario we compute the cost of intervention: on money market, and imposing administrative restrictions. Depending on these costs, and taking into account the deflection of the NFA from the target, we determine the optimum reaction of a central bank in order to efficiently manage the net foreign assets.

The barrier H related with the possibility on an administrative reaction is assigned at 6000 (mil. USD) for the following reason: an empirical condition asks for the official reserves to fluctuate around 3-6 months of imports. Consider the authorities are risk aversion, and so we choose the most prudent solution for the barrier (let the central bank foreign liabilities and the banks net foreign assets be zero and establish the minimum limit for the official reserves to be 3 months of imports). We get a critical level for H valuing 3 months of imports. Assuming that between July 2003 – December 2003 the average level for the Romanian imports is 2000 (mil USD) we get H = 6000. The scenarios outcomes regarding the NFA evolution and the costs implied by the two types of central bank interventions are described in the following tables:

Table 1: Optimum level for the NFA, and the factual level for NFA according to the five scenarios

Level NFA	Jun.03	Jul.03	Aug.03	Sep.03	Oct.03	Nov.03	Dec.03
Optimum (IMF agreement)	7060	7308	7556	7804	7765	7726	7658
Shock 1%	6989.4	7234.92	7480.44	7725.96	7687.35	7648.74	7608.15
Shock 5%	6707	6942.6	7178.2	7413.8	7376.75	7339.7	7300.75
Shock 10%	6354	6577.2	6800.4	7023.6	6988.5	6953.4	6916.5
Shock 20%	5648	5846.4	6044.8	6243.2	6212	6180.8	6148
Shock 25%	5295	5481	5667	5853	5823.75	5794.5	5763.75

Note: The shocks represent NFA adverse development by 1%, 5%, 10%, 20%, and 25% respectively.

Table 2: The intervention cost on money market - C_A (relation 9)

Cost	Jun.03	Jul.03	Aug.03	Sep.03	Oct.03	Nov.03	Dec.03
C_A -1%	23.85	31.72	33.05	34.40	4.13	4.07	3.80
C_A -5%	119.27	299.19	315.73	332.68	185.77	183.81	180.77
C_A -10%	238.54	949.84	1007.60	1067.04	784.33	776.28	765.99

[6] In the agreement, the target for net foreign assets is mentioned quarterly. We assume linear evolution within the months that build the quarter

C_A -20%	477.08	3305.53	3519.82	3740.82	3219.83	3187.24	3149.80
C_A - 25%	596.35	5010.56	5340.16	5680.23	5056.77	5005.72	4948.40

Note: These results were reached changing the variables from relation (9) with the results from Table 1. The regression of the relation (8) using Romanian data leads us to $\theta = 0.77$

Table 3: The intervention cost by administrative measures to restrict free movements of capital - C_B (relation 10)

Cost	Jun.03	Jul.03	Aug.03	Sep.03	Oct.03	Nov.03	Dec.03
C_B -1%	248.59	189.57	133.97	88.72	95.03	101.65	108.93
C_B -5%	407.83	333.31	252.85	179.73	190.39	201.40	213.32
C_B -10%	691.68	614.60	509.22	395.78	413.40	431.20	450.02
C_B -20%	1455.37	1486.06	1448.08	1338.50	1359.95	1379.95	1399.30
C_B -25%	1832.48	1949.17	2020.06	2012.88	2019.87	2024.64	2027.27

Note: These results were reached replacing the variables from relation (10) with the results from Table 1. The hypotheses for the relation (10) are the following: r = 18%, q = 12%, $\sigma = 0.44$, T = 1 month (1/12), S = NFA values according to the 5 scenarios, H = 6000, X = NFA^{op} from the present month

The figures lay out that an adverse shock against the net foreign assets up to 20% call forth the central bank reaction on money market, namely increasing the interest rates. A shock above 20% on NFA activates the critical barrier of USD M6000. This is the moment when the central bank may choose between money market intervention and administrative intervention, depending on the costs of each type of intervention. For the Romanian situation, the cost analysis assesses that exceeding the barrier call for administrative interventions.

6. Conclusions

Views backed by practice highlight that restricting capital movements is a need as long as a country does not fit the minimum conditions regarding a sound financial system and a stable economy able to cope with the external shocks. The crises from Asia, Latin America or Russia were triggered also by the capital movement liberalization problems. Other opinions, also back by practice, argue that, in many cases, the harvest of maintaining or imposing new restrictions on capital movements is not so efficient in order to fight the capital outflows.

One of the paper's ideas to use a threshold (as a minimum level the net foreign assets may not drop below) exhibits that both above-mentioned solutions to manage capital flows are correct, but in different situations. The antithetic views are accommodated using the idea of reaction entailed by reaching or not a certain threshold (similar to the artificial neuronal network response, if you like).

Choosing net foreign assets instead of official reserves as a variable for policy-makers decisions evinced to be useful, because the relation between the balance of payments components and net foreign assets is more robust, and has greater emphasis in monitoring capital liberalization process.

The main idea in the paper is that, if the NFA drop (or is an anticipation of dropping) below an optimal value (the target), the central bank has two alternatives to react: on money market, or using administrative restrictions against free movements of capital. The type of reaction will be chosen comparing which alternative has a lower cost. Moreover, because restricting capital movements is a very brutal measure, the idea of a minimum ceiling for the NFA occurs. Thus, the central bank reaction using administrative measures will arise as an alternative just in the situation the net foreign assets drop beneath the ceiling.

Concerning the reaction on money market, the central bank from accession and acceding countries do not prefer the exchange rate as a tool of intervention, in order not to jeopardize the nominal and real convergence processes. The interest rates are almost exclusively the preferred tool.

The econometric test for the methodology framed in the paper uses Romanian data, and employs 5 scenarios regarding the adverse evolution for the net foreign assets. The results exhibit that a negative shock on NFA up to 20% is advisable to be counteracted on money market intervention, increasing the interest rates. A shock higher than 20% activates the critical barrier (USD M6000). The analysis of the alternative costs leads, for Romania, to the administrative intervention solution.

Taking into account that the fall of the net foreign assets more than 20% is a low probability development, we conclude that the capital account liberalization (commitment that goes under the EU-Romania negotiations within Chapter 4 – *Free movements of capital*) may go on without important difficulties, at least in a short-term horizon, respectively for the second stage of the capital liberalization schedule (see Annex 2). As long as the variables from the model change (the imports, the exchange rate volatility, etc.), a new analysis should be conveyed in order to assess the new conditions for the third stage of the capital liberalization schedule. This analysis also asserts if the administrative intervention of the central bank is any longer necessary.

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ANNEXES

Annex 1: Romania – statistical data (1990-2002)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	(percent of GDP)												
Current account	-8.0	-4.7	-7.8	-4.7	-1.7	-4.9	-7.4	-6.2	-7.9	-4.1	-3.8	-5.9	-3.4
Capital account	8.1	4.5	-1.1	1.1	-0.8	3.5	4.9	-0.6	6.4	1.3	2.7	3.7	5.0
Foreign direct investments	0.0	0.1	0.4	0.4	1.2	1.8	1.2	3.7	5.3	2.7	2.7	2.6	2.4
	(months of imports, end of period)												
Foreign assets	...	1.3	1.5	2.0	3.1	1.9	2.1	3.6	2.7	2.8	3.3	3.9	4.6
	(bl USD*)												
Current account	-3.3	-1.3	-1.5	-1.2	-0.5	-1.7	-2.6	-2.2	-3.0	-1.5	-1.4	-2.3	-1.5
Capital account	3.1	1.3	-0.2	0.3	-0.2	1.2	1.7	1.0	2.7	0.5	1.2	1.5	2.3
Foreign direct investments	0.0	0.0	0.1	0.1	0.3	0.7	0.4	1.2	2.0	1.0	1.0	1.1	1.1
Gross international reserves	1.4	1.3	1.5	1.7	3.1	2.6	3.1	4.7	3.8	3.6	4.9	6.4	8.4
	(percent change, December/December)												
Real GDP	-5.6	-12.9	-8.8	1.5	4.0	7.2	3.9	-6.1	-4.8	-2.3	1.6	5.3	4.7[p]
Consumer prices index	4.7	222.8	199.2	295.5	61.8	27.7	56.9	151.4	40.6	54.8	40.7	30.3	17.8
Nominal exchange rate (ROL/USD)	140.4	444.5	143.4	177.4	38.5	45.9	56.5	98.8	36.5	66.7	42.0	21.8	6.0
Broad money	...	102.2	75.4	143.3	138.1	71.6	66.0	104.9	48.9	44.9	37.9	46.2	38.1

* starting March 3, 2003, euro has become the reference currency for the exchange rate
Source: National Bank of Romania Annual Reports, 1995-2001; NBR Monthly Bulletin no. 12/2002.

Annex 2 - Liberalization of Capital Movements Timetable

Stages of liberalization	Year	Name of the capital operation
Liberalization of direct and real estate investments abroad by residents, as well as of the personal capital movements and other capital movements. (**First stage**)	2001	- direct investments abroad by residents; - investments in real estate abroad by residents; - admission of domestic securities to a foreign capital market; - loans and short term credits (with maturity less than one year) granted by non-residents to residents; - sureties, other guarantees and right of pledge granted by non-residents to residents; - personal capital movements representing short term loans granted by non-residents to residents; - gifts and endowments; - dowries; - inheritances and legacies; - transfers of assets constituted by residents, in the event of emigration, at the time of their installation or during their period of stay abroad; - death duties; - damages (where these can be considered as capital); - refunds in the case of cancellation of contracts and refunds of uncalled for payments (where these can be considered as capital); - transfers of the money required for the provisions of services (not included under operations in current account); - miscellaneous.
Liberalization of capital movements related to insurance contracts and other capital movements with significant impact on real economy. (**Second stage**)	2002	- admission of units of national collective investment undertakings to a foreign capital market; - medium and long term credits related to commercial transactions or to the provision of services granted by residents to non-residents; - premiums and payments in respect with life insurance; - premiums and payments in respect with credit insurance; - other transfer of capital in respect with insurance contracts; - physical import and export of financial assets representing securities.

	2003	- acquisition by residents of foreign securities dealt in on a stock exchange or not dealt in on a stock exchange; - acquisition by residents of units of foreign undertakings dealt in on a stock exchange or not dealt in on a stock exchange; - financial loans and credits granted by residents to non-residents; - sureties, other guarantees and right of pledge granted by residents to non-residents; - personal capital movements representing loans granted by residents to non-residents.
	2004	- admission of foreign securities to the domestic capital market; - admission of units of foreign collective investments undertakings to the domestic capital market; - operations in current and deposit accounts carried out by non-residents with domestic financial institutions; - physical import and export of financial assets representing means of payment of every kind.
Latest by the date of accession (**Third stage**)		- acquisition by non-residents of domestic money market securities and instruments; - acquisition by residents of foreign money market securities and instruments; - admission of domestic securities and instruments to a foreign money market; - admission of foreign securities and instruments to the domestic money market; - operations in current and deposit accounts carried out by residents with foreign financial institutions.
Upon accession		- liberalization of acquiring by the non-resident legal persons from EU of land with agricultural and forestry destination, of land permanently under water, as well as of land laying outside and inside town limit.

Annex 3

Dependent Variable: D_NFA
Method: Least Squares
Sample(adjusted): 1998:02 2003:04
Included observations: 63 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
R	3093.493	994.6803	3.110037	0.0028
CS	-3063.449	1006.063	-3.044988	0.0034

R-squared	0.131992	Mean dependent var	68.31104
Adjusted R-squared	0.117762	S.D. dependent var	246.5639
S.E. of regression	231.5913	Akaike info criterion	13.75906
Sum squared resid	3271706.	Schwarz criterion	13.82709
Log likelihood	-431.4103	Durbin-Watson stat	1.996017

The residuals are stationary (according to the ADF test), but the normal distribution probability is close to zero (Jarque-Bera test).

Null Hypothesis: RESID_ECUATIE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.876060	0.0000
Test critical values:	1% level	-3.540198	
	5% level	-2.909206	
	10% level	-2.592215	

*MacKinnon (1996) one-sided p-values.